Social Impacts of the Taean Oil Spill: An International Perspective

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Dear Colleagues and Friends,

Greetings and salutations on the occasion of the first anniversary of the Taean oil spill. I am pleased and privileged to join with you in remembrance of that event. But what shall we remember? What are the "lessons learned" that we should carry forward as we assess its impact?

INTERNATIONAL EXPERIENCE

The date of December Seventh holds a particular significance for Americans, going back to 1941 and the Japanese attack on Hawaii, an event President Franklin Delano Roosevelt marked as "a date that will live in infamy." Ever since, we commemorate that as Pearl Harbor Day, a symbol not only of Japanese treachery but also of American complacency and unpreparedness.

(The attack on Pearl Harbor has too an oil connection; it signals perhaps the opening shot of what Klare (2001) calls the coming "resource wars." In response to the Japanese occupation of southern Vietnam, on 24 July 1941 the U.S., which was then supplying three-quarters of Japan's oil, froze their assets in this country, imposing a de facto embargo on their oil purchases. Faced with the prospect of dwindling oil supplies, the Japanese government embarked on a path leading to Pearl Harbor.)

The Santa Barbara Channel Oil Spill

There are other events and dates in the American experience that are likewise symbolic and significant to our understanding of ourselves and the world we inhabit. Although it involves the blowout of an offshore oil platform and not a tanker accident, the Santa Barbara Channel oil spill of 28 January 1969 was such an event.

> … the simplified cause of the blowout was an industrial accident. Yet how the accident precipitated the events that followed was far from simple. Union Oil (now Unocal) had been granted a waiver by the United States Geological Survey that allowed them to use a shorter

> casing on the pipe than Federal Standards prescribed, a casing is a reinforcing element of the well that is supposed to prevent blowouts. Even though the well itself was capped, the fragmentation of the wellhead produced a disaster. (Clarke and Hemphill 2002: 158)

The rupture was contained after eleven days, in the course of which some three million gallons of oil were ejected. Like the Taean spill, long stretches of a scenic coastline were oiled, resulting in environmental damage and social disruption. Unsettled questions of damage assessment and just compensation arose to confront and confound existing regulatory institutions and legal regimes long after the cleanup (Easton 1972).

Most important, the Santa Barbara Channel oil spill gave decisive impetus to the environmental movement in the United States, which culminated in passage of the National Environmental Policy Act of 1969 (NEPA). Among other things, NEPA instituted the environmental impact assessment (EIA) process which has now assumed worldwide importance. Korea has participated and led in this movement, particularly in its Prior Environmental Review System:

> The Prior Environmental Review System (PERS), a policy measure for sustainable development reflecting environmental conservation in development, aims to balance development and preservation by identifying possible environmental impacts of administrative plans and development projects at the early stage of planning. The system includes considerations for ways to execute development plans while harmonizing the artificial and natural environment in an aesthetically pleasing manner. (Ministry of Environment and Korea Environment Institute 2006: 19)

Passage of NEPA and ascendancy of the environmental movement was celebrated on Earth Day 1970 (22 April). With publication the following year of *The Limits to Growth* (Meadows and others 1972), foretelling catastrophe if global "business as usual" continued apace, it seemed we had entered a new era of environmental consciousness, concern, and conscience.

The euphoria was to be short-lived, however, overtaken on 6 October 1973 with the outset of the Yom Kippur War in the Middle East and the ensuing "energy crisis" caused by the Organization of Petroleum Exporting Countries (OPEC) embargo on oil exports--or, put differently, caused by growing dependence in the U.S., Europe, and elsewhere on imported oil. As the gas lines grew, it seemed we had been plunged from abundance to scarcity.

The *Exxon Valdez* Oil Spill

Twenty years after the Santa Barbara Channel oil spill, on 24 March 1989, the supertanker *Exxon Valdez* grounded on Bligh Reef in Prince William Sound, Alaska, spilling some 10.8 million gallons of oil over 12,000 miles of coastline, some 470 miles distant from the scene of the accident. Though of considerably greater magnitude, by approximately a factor of four in terms of spillage, in some respects this event was closely analogous to the Taean oil spill:

- Environmental damage was incurred;
- Fisheries were closed;
- Recreation and tourism were curtailed;
- Livelihoods were lost
- Compensation was claimed.

There are elements of misanalogy present as well; for instance, rather than beach tourism, the area catered mainly to cruise ships. Because of its remote location, the cleanup effort did not attract a large influx of volunteers. Throughout the entire recovery process, the issue of compensation was a central focus of attention (and subsequent litigation), injecting its own distractions and distortions.

Of particular interest however is the story of community recovery, recounted by Davis (1996) among many others. Seven years after the event she was unwilling to offer her assessment of its aftermath for fear of prejudicing some claimants' petitions for compensation then still pending. In fact, only as recently as 25 June of this year was a final decision rendered, by the U.S. Supreme Court, reducing punitive damages from a lower court's award of $5 billion to $500,000 (Liptak 2008).

A 2002 estimate of recovery status reported on the Web site "Prince William Sound: Paradise Lost?" (Kelly n.d.) provides some analysis and a list of "recovery objectives" for each of four areas of human services:

- ***Recreation and tourism*** will have recovered, in large part, when the fish and wildlife resources on which they depend have recovered and recreation use of oiled beaches is no longer impaired.
- ***Commercial fishing*** will have recovered when the commercially important fish species have recovered and opportunities to catch these species are not lost or reduced because of the effects of the oil spill.

- ***Passive uses*** will have recovered when people perceive that aesthetic and intrinsic values associated with the spill area are no longer diminished by the oil spill.

- ***Subsistence*** will have recovered when injured resources used for subsistence are healthy and productive and exist at prespill levels. In addition, there is recognition that people must be confident that the resources are safe to eat and that the cultural values provided by gathering, preparing, and sharing food need to be reintegrated into community life.

The institutional response to the *Exxon Valdez* oil spill has been notable at both federal and state levels. On the former, within 18 months of the event major legislation passed the U.S. Congress in the form of the Oil Protection Act of 1990 (OPL 90). Among other things, it provided for the exclusion of single-hull vessels over 5,000 gross tons from U.S. waters after 2010 (Committee on Oil Pollution Act of 1990 1998) and the creation of the Prince William Sound Oil Spill Recovery Institute to

> … "identify and develop the best available techniques for preventing and responding to oil spills in the Arctic and sub-Arctic" (Title V, Section 5001, Oil Pollution Act of 1990); and also to "assess and understand the long range effects of Arctic or sub-Arctic oil spill impacts on the natural resources of Prince William Sound. . . and the environment, the economy and the lifestyle and wellbeing of the people who are dependent on them."

In addition, it mandated establishment of regional advisory committees, leading to formation of the Prince William Sound Regional Citizen's Advisory Council and Cook Inlet Regional Citizens' Advisory Council. Further, OPA 90 authorized creation of an industry-sponsored Marine Spill Response Corporation to maintain a fleet of spill response ships in five regional centers and a joint federal-state Exxon Valdez Oil Spill Trustees Council to administer the expenditure of compensatory funds. At the state level,

> … between April 1989 and May 1990 the Alaska Legislature passed a dozen new laws dealing with prevention, response and oversight. Among the most significant laws was a law boosting the state's emergency oil and hazardous substance response fund to $50 million--50 times what the fund had contained at the time of the spill. The Legislature also mandated a complete rewrite of the state's oil spill prevention, response, and contingency planning regulations, and increased both liability and penalties for polluters. (Kelly n.d.)

Another outcome of the incident, this one emphasizing corporate social responsibility, was promulgation of the "Valdez Principles" for environmentally sound business practices, now the CERES (Coalition for Environmentally Responsible Economies) Principles (Exhibit 1):

The Valdez Principles

1. Protection of the Biosphere

We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitats affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.

2. Sustainable Use of Natural Resources

We will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve non-renewable natural resources through efficient use and careful planning.

3. Reduction and Disposal of Wastes

We will reduce and where possible eliminate waste through source reduction and recycling. All waste will be handled and disposed of through safe and responsible methods.

4. Energy Conservation

We will conserve energy and improve the energy efficiency of our internal operations and of the goods and services we sell. We will make every effort to use environmentally safe and sustainable energy sources.

5. Risk Reduction

We will strive to minimize the environmental, health and safety risks to our employees and the communities in which we operate through safe technologies, facilities and operating procedures, and by being prepared for emergencies.

6. Safe Products and Services

We will reduce and where possible eliminate the use, manufacture or sale of products and services that cause environmental damage or health or safety hazards. We will inform our customers of the environmental impacts of our products or services and try to correct unsafe use.

7. Environmental Restoration

We will promptly and responsibly correct conditions we have caused that endanger health, safety or the environment. To the extent feasible, we will redress injuries we have caused to persons or damage we have caused to the environment and will restore the environment.

8. Informing the Public

We will inform in a timely manner everyone who may be affected by conditions caused by our company that might endanger health, safety or the environment. We will regularly seek advice and counsel through dialogue with persons in communities near our facilities. We will not take any action against employees for reporting dangerous incidents or conditions to management or to appropriate authorities.

9. Management Commitment

We will implement these Principles and sustain a process that ensures that the Board of Directors and Chief Executive Officer are fully informed about pertinent environmental issues and are fully responsible for environmental policy. In selecting our Board of Directors, we will consider demonstrated environmental commitment as a factor.

10. Audits and Reports

We will conduct an annual self-evaluation of our progress in implementing these Principles. We will support the timely creation of generally accepted environmental audit procedures. We will annually complete the CERES Report, which will be made available to the public.

PERSONAL EXPERIENCE

I am an improbable person to be speaking to you on this occasion. My experience in disaster relief and research is limited to a slow-moving environmental disaster of drought and desertification in the Western Sahel over the past quarter century (Wolf 2008) and an investigation of the "rapid disassembly" of the nuclear reactor core at Three Mile Island Unit 1 near Harrisburg, Pennsylvania in 1979 (Sills, Wolf, and Shelanski 1982).

I am not a stranger to oil spills, however. I have worked for some years in the Niger Delta region of Nigeria, where oil spills are endemic. In my own backyard, New York City,

> One of the world's largest underground oil spills lurks beneath the shores of Newtown Creek in Greenpoint, Brooklyn, courtesy of oil companies such as ExxonMobil, ChevronTexaco, and others. At approximately 17 million gallons and 55 acres, the spill is at least 6 million gallons larger than the 1989 Exxon Valdez spill in Alaska. The spill is the result of leaks in the 1940s and 1950s. ExxonMobil neglected the spill for more than two decades, as it slowly migrated under the community and into the creek.
>
> In a 1978 helicopter patrol, the US Coast Guard discovered a large plume of oil flowing out of the banks of the creek. Virtually no action was taken until 1990, when the state entered into consent orders with ExxonMobil. Rather than bring the company to justice, the order required only the most rudimentary cleanup, demanded no cleanup benchmark, and failed to order a single penny in penalties. Little has improved in the interim.
>
> The spill has been oozing under Greenpoint for five decades, destroying the local aquifer, rendering more than 50 acres of land undevelopable, settling under more than 100 homes on three residential blocks, severely contaminating Newtown Creek, and threatening aquatic life harbor-wide. (Hudson Riverkeeper n.d.)

On the early morning of New Year's Day 1990, at Arthur Kill channel between Staten Island and New Jersey in the lower harbor, an aging underwater pipeline between Exxon's Bayway refinery and its Bayonne terminal ruptured, spilling 567,000 gallons of Number 2 fuel oil. Exxon promptly compensated the City of New York $17 million to restore the four hectares of marshland contaminated. Perhaps because of the season of occurrence, natural and human communities resumed normal life after the spill with only minor disruption (Burger 1994; Nixon 1995).

In I989 I helicoptered in to inspect the *Exxon Valdez* spill in Prince William Sound, Alaska, and this year I "parachuted in" twice (April and June) to observe the Taean recovery effort. That experience might be called "disaster tourism," which is not without interest but definitely not the same as living and working with a disaster situation such as the one under discussion in this symposium.

My personal acquaintance with the Taean oil spill was made possible by the benevolence of my colleague and friend, Dr. Jong-gwan Jung of the Chungman Development Institute, who is the real expert. He should be the one giving this paper, except that according to the program he is giving one of his own in the parallel session.

With that disclaimer, what I can offer to this discussion is some reflection on my own experience that may help to illuminate the human dimensions of the Taean incident. I approach this from a background in the field of impact assessment, and social impact assessment particular. In fact, one of the early applications of impact assessment methodology was to the social impacts of oil spills (Enk 1974).

That, and most recently, from the Fall Meeting of the Korean Society of Environmental Impact Assessment (KSEIA) in Busan, is some of where I am coming from. Where I am coming to is the situation on and in the ground and waters here in Taean.

TAEAN EXPERIENCE

If I am an improbable person, the Taean oil spill was an improbable event. I will briefly recount the now all-too-familiar circumstances.

In the early morning of 7 December 2007 tugs were towing the 11,800-ton Samsung 1 barge carrying a Samsung Heavy Industries crane from Incheon Port to a construction site on Geoje Island in heavy seas.

At the time, a 146,000-ton supertanker, the *Hebei Spirit* was lying at anchor some ten km off Mallipo Beach awaiting offloading its cargo bound for the Hyundai Oil Bank. The single-hull ship was produced in 1993 by Kawasaki Heavy Industries, Sakalde, Japan under Hong Kong registry.

Around 0652 the towline parted, casting the barge adrift. Both coastal control and the *Hebei Spirit* crew were unable to contact the tugs on the designated radio frequency. At 0706, the barge collided with the tanker, causing three punctures in its hull above the waterline through which 2.7 million gallons of oil spilled before they could be plugged. In response, within hours a number of vessels and oil booms were deployed to contain the spill.

Following the accident, a massive cleanup operation ensured, involving by one estimate an aggregate figure of two million volunteers in the first three months. Later estimates put the eventual total at some 1.3 million.

According to a Ministry of Land and Maritime Affairs report, the spill contaminated a 300-km-long stretch of coastline in South Chungcheong Province and North and South Jeolla provinces, including 101 islands, 15 beaches, about 35,000 hectares of fish farms and fishery facilities, and affecting about 40,000 households (Cho 2008). The impacted area contains environmentally sensitive as well as commercially important features.

> The Taean Peninsula itself is listed as one of the top "22 Priority Sites for Conservation" in the Yellow Sea, according to the South Korean-Chinese Government Yellow Sea Large Marine Ecosystem Program. Taeanhaean National Park boasts 250 species of flora, and in the winter the area serves as an important stopover for many species of migrating birds ... Some of the most delicate wetland ecosystems in Korea are also located on the same peninsula. (Hudson 2007)

Early estimates of the environmental damage by the International Oil Pollution Compensation (IOPC) Funds were valued at 424 billion won, later increased to 550 billion, including 134 billion for the cleanup operation, 206 billion for damages to the fishing industry, and 233 billion for the tourism industry (Kim 2008).

> The maximum amount that the IOPC Funds can pay to the victims is some 300 billion won. According to a special law that the Korean government established for the incident, the government will pay the rest of the damage assessed by the funds--273 billion won.

Even so, a committee of fishermen's cooperatives in Taean claim the actual extent of damage is much greater, an estimated 2 trillion won. They contend that eleven cities and counties in South Chungcheong and North and South Jeolla provinces suffered from the oil spill.

> "We are conducting our own research on the damage with experts. We think the damage will be much larger, and Samsung, confirmed as the wrongdoer by the ruling, should pay the amount over 573 billion won," Lee Won-jae, head of the committee said.

On 23 June a Daejeon District Court found the two masters of the Samsung tugs guilty of negligence in their duties, doing enormous damage to local residents. Master Cho was sentenced to three years in prison and fined 2 million won for violating the Maritime Pollution Prevention Act, while Master

Kim was sentenced to one year in prison. Samsung Heavy Industries were fined 30 million won, and face further civil lawsuits from local residents (*The Chosun Daily* 2008).

Recovery of the affected area has progressed more rapidly than expected:

- 17 September: Revival of the anchovy industry in Dohang-ri, Taean-gun, South Chungcheong Province (*The Hankyoreh*)

- 2 September: The Ministry for Food, Agriculture, Forestry and Fisheries completed safety checks on marine life in the Taean Country region and says normal service can now be resumed. (Arirang News)

- 23 July: Locals dig for thin-shelled surf clams yesterday in the Taean mud flats in South Chung-cheong Province, the site of Korea's worst-ever oil spill last December. They said the contamination has been overcome, and fishing has resumed. (*JoongAng Daily*)

- 30 June: Reopening of the Taean beaches: "The news of the reopening comes just over six months after the worst oil spill in Korea's history hit the West Coast. … It is a sheer miracle that the cleanup of the West Coast beaches is 98 percent complete, as local authorities ascertain, after 10.5 million liters--or 2.9 million gallons--of crude oil from a supertanker covered the waters and coasts of Taean in the Dec. 7 disaster. (*The Korea Herald*)

- 7June: Taean recovering from nation's worst oil spill: "Six months after the country's worst oil spill, the efforts of 1.12 million volunteer workers had paid off as the ocean and beaches in Taean County regained their natural color. Since May 19, residents in the area have reopened fish farms." (Shin)

A number of gaps in this account remain, however, such as:

- Why were coastal control and the *Hebei Spirit* crew unable to contact the tugs on the emergency frequency?

- Why was the *Hebei Spirit* anchored in proximity to coastal shipping lanes?

- What accounts for the location of the refinery in the vicinity of a protected area?

Oddly, little is reported on the emergency preparedness and response.

However those may be, there are deeper questions underlying the situation at hand that need to be surfaced and addressed. They concern risk management, environmental management, and community management at local, regional, and national levels.

INVITATION TO AN ACCIDENT

At the outset of this brief recounting, I said the Taean oil spill was an "improbable" accident. Now I want to amend that. On another reckoning, it was all too predictable, not in regard specific time and place, but in regard to the certainty of occurrence of similar events.

(In fact, there had been one previous incident recently in Korean waters, the grounding of the tanker *Sea Prince* on 23 July 1995 at Yosu port on the southeast coast as it was attempting to find shelter from an oncoming typhoon, spilling around 5,000 tonnes of oil.)

System Accidents

While the proximate cause of the Taean accident can be viewed as personal negligence on the part of the tug operators, as the courts held, but that is only the tip of the "oilburg." Preconditions for the accident were created and existed far beyond those individuals' control. Indeed, it may be fairly said that we are here in the presence of a "system" accident—what Gaskins (1989: 58, 63) calls an "environmental" accident "where complex events cannot be plausibly reduced to demonstrable causal relationships…"--that is, attributable to a single event or individual.

> … *environmental accidents* compel us to review our whole understanding of the social order … the reality of our social interdependence, and thus the limitations of a political and legal system still bound in many ways to the individualist premises of classical liberalism … environmental accidents will require something entirely new: a systematic public response to personal injury. In short, the United States needs to develop a more comprehensive social policy on accidents. (Gaskins 1989: 5)

And not just the United States; Korea too enters the class of what German sociologist Ulrich Beck (1992) calls the "risk society."

Korea Risk Society

> It is a theory on risk that stipulates that industrialization and modernization brings [sic] technological development and material

> prosperity, but also greater risk … Beck's theory on risk purports that … calamities are a structural part of modern society. It is a society that encompasses catastrophic disaster in its daily life.
>
> Beck, who visited Korea in March said, "South Korea, where modernization has been extreme, is at grave risk with many dangers." His words resonated here, because we had just suffered the Taean oil spill …
>
> Beck wrote, "It is important for the state to carefully discuss with the people what risks they can handle and what risks it would first manage and thus come up with an agreement." If risk society is an inherent characteristic of modern society, the state's and government's duty is to manage risk and safeguard its people. (Yang 2008)

The clear implication is that not only has Korea become a "risk society'"; equally, it must become a risk management society to anticipate and cope with what sociologist Charles Perrow (1984: 5) calls "normal accidents": given the system characteristics of interactive complexity and tight coupling, "multiple and unexpected interactions of failures are inevitable."

"What Goes Around Comes Around"

"What goes around comes around" is a quaint American expression meaning:

1. The status eventually returns to its original value after completing some sort of cycle.

2. A person's actions, whether good or bad, will often have consequences for that person.

> See also: "come full circle"; karma (Wikipedia)

Korea's economic development strategy in the 1960s "targeted" shipbuilding as one of the industries in which it aspired to become competitive and even dominant. The Shipbuilding Industry Promotional Act of 1967 provided government incentives and subsidies in pursuit of this aim which, abetted by cost-cutting, eventually succeeded. Part of those measures involved stripping tankers of their double hulls and the greater protection that afforded (Mostert 1974).

It was no accident that the *Hebei Spirit*, was single-hulled. In the six months after the Taean oil spill Korean refiners still hired more single-hulled tankers

than any other nation, accounting for "more than 25 percent of the tanker market excluding double-hulled carriers" (Bloomberg News, 8 July 2008). The Korean government and oil companies are however considering advancing a 2011 ban on single-hull tankers, and SK Energy Company, the largest refiner, says it will ban single-hull ships after 2010 (Bloomberg News 28, January 2008).

Korea's near-total dependence on imported oil is another risk factor, increasing the insecurity of supply interruptions and adding economic burdens to domestic industries. Moreover, "The country's per capita consumption of oil is among the top 10 in the world" (Choi 2008). Accordingly, he concludes,

> I believe development of alternative energy sources is necessary to solve the energy problems in Korea in order to ensure economic development, increase employment and provide services for its people. Unless alternatives can be found for oil, Korea will continuously be in a perilous situation, and its future will be vulnerable.

The tidal power plants currently under construction at Sihwa and other locations are a case in point, although raising questions of choosing between developing urban-industrial coastlines and preserving natural ones (see below).

RESPONSE AND RECOVERY

Although Gaskins associates "environmental" with technological "system accidents," usually a distinction is drawn between natural and social environments and their risks. On this reckoning, "environmental" accidents are naturally occurring events such as earthquakes, floods, and tsunamis, sometimes considered "acts of god," while technological accidents are induced by human agents and actions.

Nevertheless, confusion of the two is understandable, because in fact their causes and effects are intermingled. For example, in the case of flooding, is the problem one of keeping the water away from the people, or keeping the people away from the water? Preventive and remedial measures may vary widely according to which view is adopted. In the former case, structural measures such as floodwalls may be prescribed; in the latter, nonstructural measures such as floodplain management may be appropriate.

Moreover, lessons learned through experience gained from one class of events may be transferable to the other. For example, in the case of the 26 December

2004 tsunami, ten propositions are offered for "Building Back Better" (Exhibit 2).

Exhibit 2. Key Propositions for Building Back Better

PROPOSITION 1

Governments, donors, and aid agencies must recognize that families and communities drive their own recovery.

PROPOSITION 2

Recovery must promote fairness and equity.

PROPOSITION 3

Governments must enhance preparedness for future disasters.

PROPOSITION 4

Local governments must be empowered to manage recovery efforts, and donors must devote greater resources to strengthening government recovery institutions, especially at the local level.

PROPOSITION 5

Good recovery planning and effective coordination depend on good information.

PROPOSITION 6

The UN, World Bank, and other multilateral agencies must clarify their roles and relationships, especially in addressing the early stage of a recovery process.

PROPOSITION 7

The expanding role of NGOs and the Red Cross/ Red Crescent Movement carries greater responsibilities for quality in recovery efforts.

PROPOSITION 8

From the start of recovery operations, governments and aid agencies must create the conditions for entrepreneurs to flourish.

PROPOSITION 9

Beneficiaries deserve the kind of agency partnerships that move beyond rivalry and unhealthy competition.

PROPOSITION 10

Good recovery must leave communities safer by reducing risks and building resilience.

Source: William J. Clinton. "Key Propositions for Building Back Better: Lessons Learned from Tsunami Recovery." New York: Office of the UN Secretary-General's Special Envoy for Tsunami Recovery, December 2006.

The central message that comes through these propositions stresses the importance of community self-help and self-management in disaster situations. How might this apply to the Taean oil spill recovery?

My impression is that community preparedness and response were not the focus or emphasis of disaster relief and recovery, in which case the result would likely be to magnify and intensify the impact on community residents. In fact, a survey conducted in December found that following the spill nearly three-quarters of Taean respondents considered suicide (Kim 2008).

DISASTER IMPACT ASSESSMENT

I said earlier that one place I am coming from is the field of impact assessment, so it is with great interest that I learned that “Since 1996 Korea has been carrying out a disaster impact assessment program” (Asian Disaster Recovery Center 2005: 48):

> The Disaster Impact Assessment (DIA) system aims at fundamentally eliminating potential causes of disasters inherent in various development projects in advance and ultimately protecting people's lives and property.
>
> The DIA was introduced to protect lives and property in downstream areas from the impact of large-scale development through disaster prevention facilities such as retention reservoirs in development areas.
>
> In 2001, the DIA's coverage was expanded and it was integrated with other impact assessment programs such as environmental impact assessment based on the Impact Assessment Act for Environment, Transportation, and Disaster.

According to the article, “each city and province has introduced a local disaster system.” Development of tourist attractions is one of 24 categories to which DIA is applicable. “Up to November 2004, 186 development plans had gone through this important program.”

> Even though Korea operates the DIA effectively, the program needs to be updated and improved. Continuous urbanization and industrialization may necessitate expanding the categories of DIA to reflect climate change, design frequency, and changes in land use.
>
> To ensure a fundamental reduction in disaster-causing factors in land development, a "Pre-Consideration and Deliberation System on

> Disaster Impact" is to be introduced. The purpose of the new system is to define new categories, including future directions and detailed plans for operation.

As of 2005, the system "is still under development, with many experts carrying out systematic research." More interesting yet, DIA is linked with sustainable development:

> The Disaster Impact Assessment program is one good example of the implementation of sustainable development. When a development plan is proposed, its disaster potential ... is thoroughly reviewed. The main objective is to minimize any increase in the potential for disaster caused by the development by using appropriate facilities and techniques....
>
> Sustainable development can be defined as development that does not increase disaster potential or vulnerability. However, to develop any area without any disturbance is almost impossible. To reduce disaster factors due to development, regulations should be considered that safeguard not only the development site itself but also areas downstream.

The article concludes, "The Disaster Impact Assessment system currently in force in Korea is effective in reducing disaster factors and offers be a good example for implementing sustainable development."

One can only wonder where DIA was when the Taean oil spill came along. I can only suggest that the intention behind this initiative is exemplary and Increasing its effectiveness deserves full support from the community of impact assessment practitioners.

The same may be said for emergency preparedness and response in my own country, and around the world. Let me remind you that about the time this article was written the city of New Orleans was drying out from Hurricane Katrina, in which the response and recovery effort was part of the tragedy.

There are constructive roles for communities at all levels to play in disaster planning, and an urgent need to merge that with development planning generally.

AFTERMATH

The Ramsar conference recently concluded was a reminder that the Korean environment remains very much at risk, particularly the coastal wetlands. *The Hankyoreh* (28 October 2008) offers this evaluation:

> South Korea is among the list of nations making an effort to drain wetlands for development. Wetlands on the nation's west coast, cited as one of the world's five intertidal zones, were destroyed, making it difficult for anyone to remember where the natural coastline is.
>
> So far this year, the Ministry of Land, Transport and Maritime Affairs has approved more than 20 proposals to drain 1,200 hectares of wetlands. Following approval of the Saemangeum tidal flat land reclamation project, the Ministry of Environment has played a leading role in permitting environmentally harmful land use.

Though certainly unfortunate and for many of those affected traumatic, the Taean oil spill can be viewed as largely a symbolic event. The public response was an impressive outpouring of sympathy and solidarity that may serve to reintroduce and reinforce environmental and communal values long after the event. As Jun Ho Kim, a university student and volunteer at the oil cleanup, said (quoted in Hudson, 19 December 2007),

> All of the Korean people think about the environment. People used to think that development was best; they only thought about development. Their consciousness has changed. Their concept about the world has changed.

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